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Clean Watersheds Needs Survey (CWNS) 2008



Cost Curves

Presenters:

Mark Sievers, Tetra Tech
Michael Plastino, US EPA

Overview

- Cost Curve Background
- Priorities for CWNS 2008
- Combined Sewers
- Wastewater Treatment Plants
- On-site Wastewater Treatment Systems
- Sanitary Separate Sewers
- Cost Curve Data Entry

Cost Curve Background

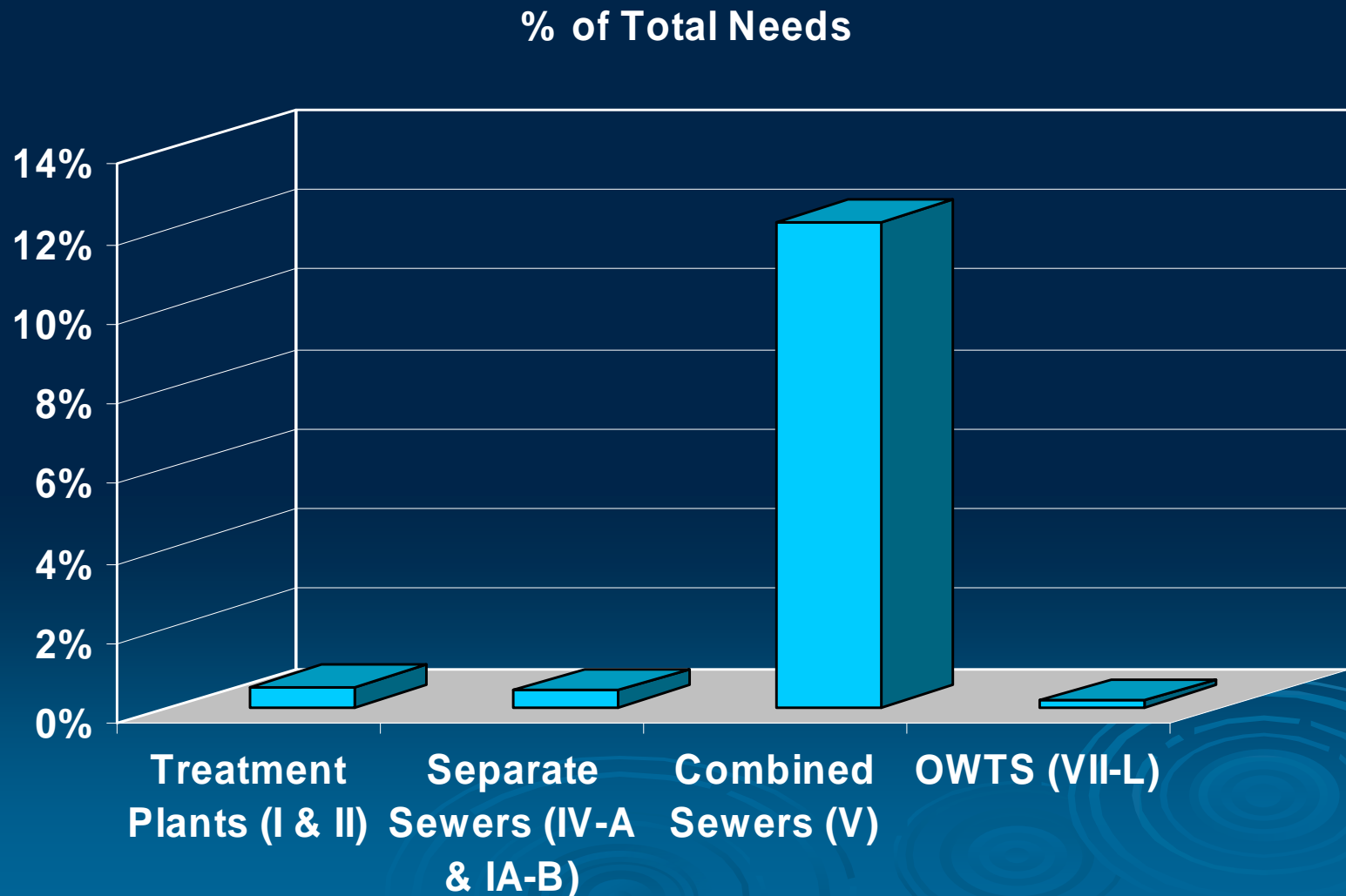
What are Cost Curves?

- Equations that have been developed by EPA to estimate a cost when
 - Project-specific cost data are not available.
 - Cost estimates are too old relative to nationally adopted CWNS guidelines.
- All curves are indexed to the Engineering News-Record (ENR) construction cost index so that year-to-year inflation is assessed.

CWNS 2004 Cost Curves

- Treatment Plants
 - New plants
 - Increase capacity
 - Increase level of treatment
 - Increase capacity and level of treatment
 - Disinfection
 - Replacement
- New/Expand Collector Sewers
- New/Expand Interceptor Sewers
- CSO Correction
- Rehabilitate Individual On-site Wastewater Treatment Systems

Cost Curve Usage in 2004



2008 Types of Cost Curves

- Combined Sewers
 - Category V
- Treatment Plants
 - Categories I & II
- Decentralized Wastewater Treatment Systems
 - Onsite Wastewater Treatment Systems
 - Clustered Systems
 - Category XII (formerly category VII-L)
- Separate Sewers
 - Categories III & IV

Priorities for CWNS 2008

CWNS 2008 Cost Curve Upgrade Prioritization Process

- Analyzed curves for
 - Accuracy of 2004 curves
 - Anticipated level of use for 2004 curves and potential new curves in 2008
- Consensus prioritization by EPA and CWNS DSARMS

Data Submission & Review Methods Subcommittee (October 2005 – August 2007)

Nancy Bowser, ID

Tom Webb, MS

Jason Denno & Terry Deuel, NY

Ketan Patel, David Shu & Scott Shymon, NJ

Rosalie Brodersen, Teresa Koon & Carrie Grimm, WV

Ray Kvalheim, EPA Region 2

Bill Tansey, EPA Region 5

Kelly Beard-Tittone, EPA Region 7

Michelle Tucker, EPA Region 10

Karen Fligger and Michael Plastino, EPA HQ

Contractor Support: Alejandro Escobar, TetraTech

CWNS DSARMS Priorities

- High
 - Establish cost curve for sewer rehabilitation/ replacement costs (best action in movement toward estimating 20-year needs)
- Medium
 - Re-establish decentralized treatment cost curves
 - Update treatment plant cost curves to address business rule changes related to advanced treatment and nutrient removal flag
 - Explore new methods for estimating costs for separate sewers and on-site wastewater treatment systems

CWNS DSARMS Priorities (continued)

- Lower
 - Bias for separate sewers
- Do not fix
 - Bias in cost curves for treatment plants
 - LOE was too high and needs estimated were a small percentage of total
 - Bias in combined sewer curves
 - Post-survey analysis suggested curves underestimated in 2000, overestimate in 2004
 - Anticipate reduced usage in 2008 due to Long-term Control Plans

Questions

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Sanitary Separate Sewers

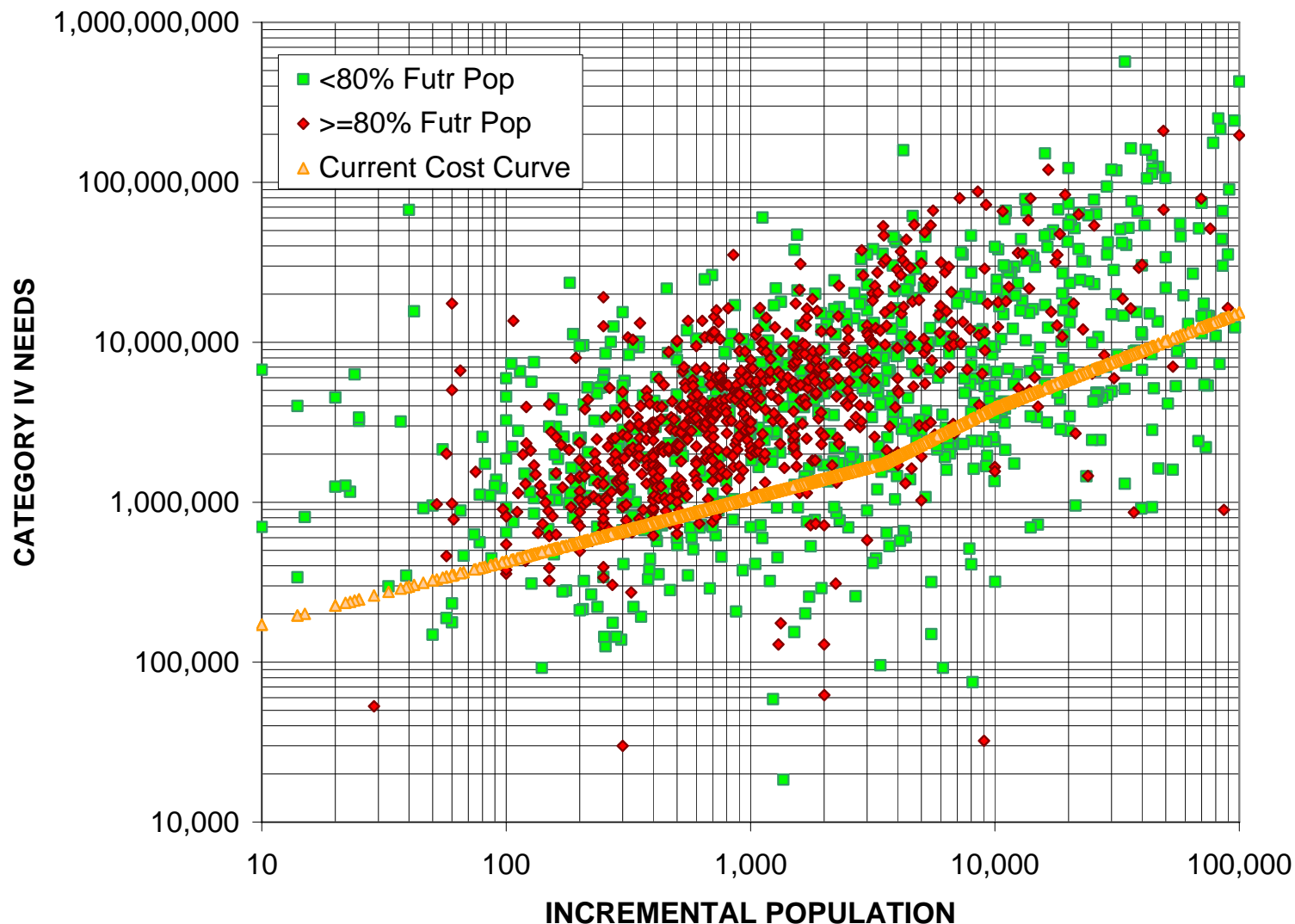
Separate Sewer Update Objectives and Issues

- Address bias for separate sewers
- Establish cost curve for sewer rehabilitation/replacement costs (best action in movement toward estimating 20-year needs)
- Explore new methods for estimating costs for separate sewers

Separate Sewer Cost Curve Background

- Basic structure of separate sewer
Category IV algorithms were developed in the mid 1990s based on simple empirical equations.

Comparison of Category IV Cost Curve to Documented Needs



Rethinking Sewer Cost Curves

- EPA evaluated a built-up cost methodology for developing planning phase cost estimates based on selected hypothetical community sizes and site conditions.
 - Engineering Assumptions: 10 States Standard (from 2004)
 - Data Sources: RS Means

Built-up Cost Methodology

1. Choose hypothetical scenarios typical of the population ranges and typical site conditions.
2. Apply the 10 States Standard to develop bid items and quantities for each hypothetical scenario.
 - Terrain/slope
 - Level of urbanization
 - Pipe material
 - Installed depth
 - Diameter
 - Existing utilities
 - Usage of gravity sewers, forced mains, and lift stations

Built-up Cost Methodology (cont.)

3. Extract applicable unit cost data from RS Means and develop, apply factors, etc., to develop a planning phase cost for each scenario that includes construction costs only.
4. Develop simplified equation that extends the hypothetical scenarios to an infinitely variable population from 1 – 15,000 and each site condition.

Hypothetical Scenarios

- Community sizes
 - 500; 2,500; 5,000; 12,500
- Site Conditions
 - New area/Flat
 - Rely on mostly gravity sewers; minimum existing streets, curbs, and other existing utilities (i.e., green field).
 - New area/Hilly
 - Rely on a combination of gravity sewers, forced mains, and lift stations; minimum existing streets, curbs, and other existing utilities.

Hypothetical Scenarios (cont.)

- Site Conditions (continued)
 - In-fill
 - Generally presumes more difficult situations with at least one pump station and assumes substantial existing streets, curbs, and other existing utilities.
 - Rehabilitation and Replacement/Open Trench
 - Presumes substantial existing streets, curbs and utilities, but will largely be handled via open trench technologies.
 - Rehabilitation and Replacement/Trenchless
 - Presumes substantial existing streets, curbs and utilities, but will largely be handled via trenchless technologies.

Opinion of Probable Construction Costs (“flat”/500 people)

MEANS Section No	MEANS Line No.	DESCRIPTION	QUANT.	UNIT	UNIT AMOUNT	TOTAL AMOUNT
G1030 807		Trenching Sand and Gravel				
G1030 807	1570	6' wide, 20' deep 3-1/2 CY bucket with trench box	11,940	LF	\$40.00	\$477,600.00
G1030 807	1540	6' wide, 10' deep 1 CY bucket with trench box	6,600	LF	\$22.00	\$145,200.00
G1030 815		Pipe Bedding				
G1030 815	1680	6' wide trench, pipe size under 32"	18,540	LF	\$10.71	\$198,563.40
31 05 16.10		Borrow				
31 05 16.10	600	Select structural fill (sand influence of roads)	17,247	CY	\$16.45	\$283,713.15
31 05 16.10	600	Select structural fill (sand under road crossings-main)	8,448	CY	\$16.45	\$138,969.60
31 05 16.10	600	Select structural fill (sand under road crossings-leads)	5,867	CY	\$16.45	\$96,512.15
31 23 23.23		Compaction				
31 23 23.23	5100	Riding vibratory roller 12" lifts, 4 passes	31,562	CY	\$0.44	\$13,887.28
33 31 13.25		Sewage Collection, PVC				
33 31 13.25	2080	8" diameter	11,940	LF	\$13.60	\$162,384.00
33 31 13.25	3240	6" wyes	200	EA	\$180.00	\$36,000.00
33 31 13.25	2040	6" diameter, leads	6,600	LF	\$8.25	\$54,450.00
G3030 210		Storm Drainage Manholes, Frames, Covers				
G3030 210	5880	Precast 4' diameter 10' deep	61	EA	\$5,250.00	\$320,250.00
G3030 210	interpolation	Add depth of 4' diameter MH	48	VLF	\$560.00	\$26,880.00

Opinion of Probable Construction Costs (“flat”/500 people)

MEANS Section No	MEANS Line No.	DESCRIPTION	QUANT.	UNIT	UNIT AMOUNT	TOTAL AMOUNT
33 32 13.13		Packaged Sewage Lift Stations, Wet Well				
33 32 13.13	2500	Lift Station, 140 gpm	0	EA	\$218,000.00	
33 32 13.13	2510	Lift Station, 350 gpm	0	EA	\$253,500.00	
33 32 13.13	2520	Lift Station, 550 gpm	0	EA	\$304,000.00	
33 32 13.13	2500	Pump Station, 140 gpm	0	EA	\$218,000.00	
33 32 13.13	2510	Pump Station, 350 gpm	0	EA	\$253,500.00	
33 32 13.13	2520	Pump Station, 550 gpm	0	EA	\$304,000.00	
33 05 23.22		Directional Drilling (Pump Station Force Main)				
33 05 23.22	310	Large equipment for 1000' runs, gravel, sand, silt (6000 LF/PS)	0	CLF	\$410.00	
33 11 13.35	200	6" HDPE butt fusion joints, SDR 21, 40' lengths	0	LF	\$15.90	
		Subtotal 1				\$1,954,409.58
01 21 63		Taxes				
01 21 63	20	Sales tax, average		%	4.84%	\$94,593.42
01 31 13.30		Insurance				
01 31 13.30	20	Builders Risk		%	0.24%	\$4,690.58
01 31 13.30	200	All Risk		%	0.25%	\$4,886.02
01 31 13.30	450	Contractor's equipment floater, max		%	1.50%	\$29,316.14
01 31 13.30	600	Public Liability		%	2.02%	\$39,479.07

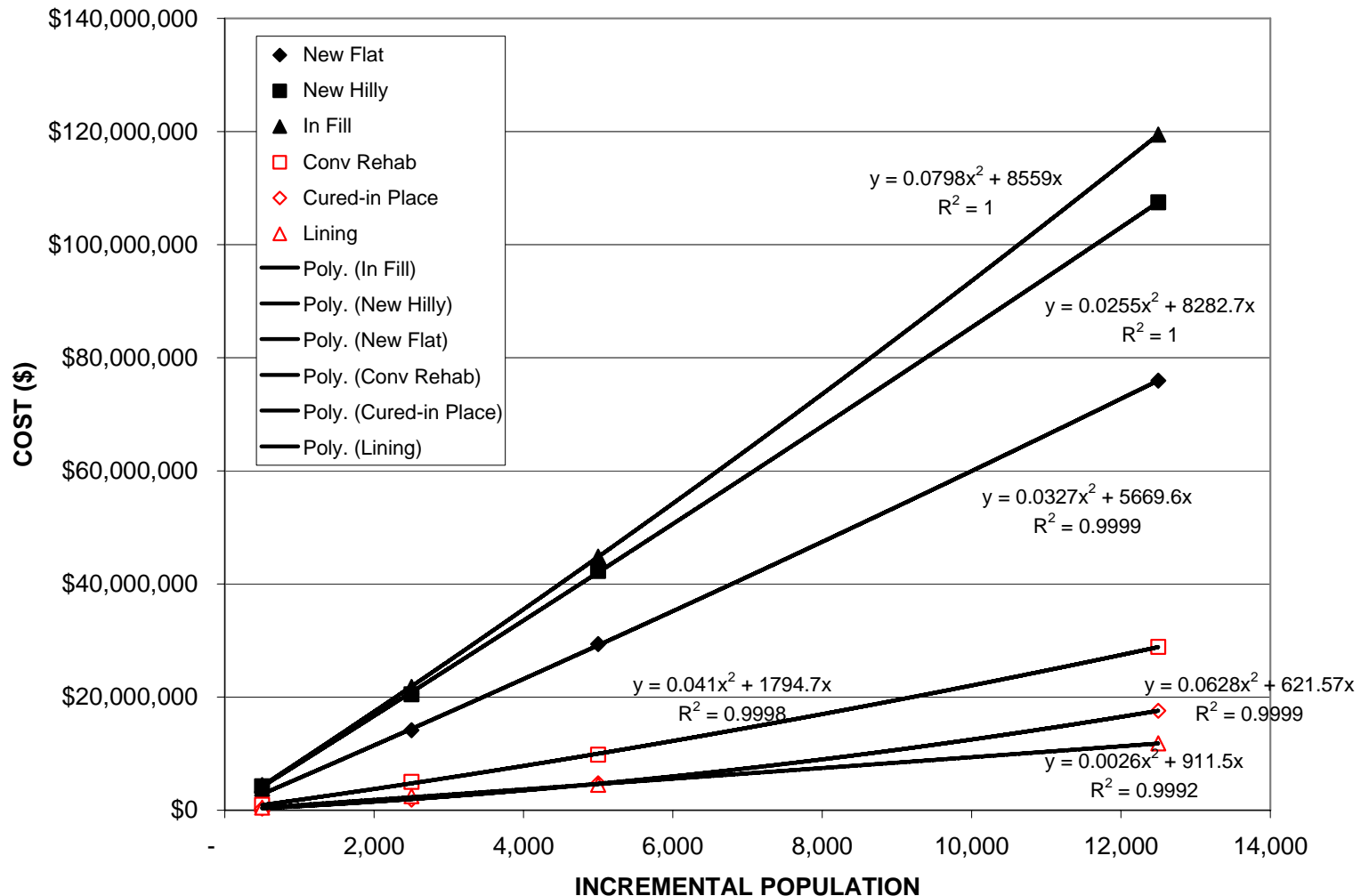
Opinion of Probable Construction Costs (“flat”/500 people)

MEANS Section No	MEANS Line No.	DESCRIPTION	QUANT.	UNIT	UNIT AMOUNT	TOTAL AMOUNT
		Subtotal 2				\$2,127,374.83
01 31 13.90		Performance Bond				
01 31 13.90	350	Roadwork , maximum		%	0.94%	\$19,997.32
01 21 16		Contingency Allowance				
01 21 16	20	Estimate at conceptual stage		%	20.00%	\$429,474.43
TOTAL CONSTRUCTION COST						\$2,576,800.00

Opinion of Probable Construction Costs (all scenarios)

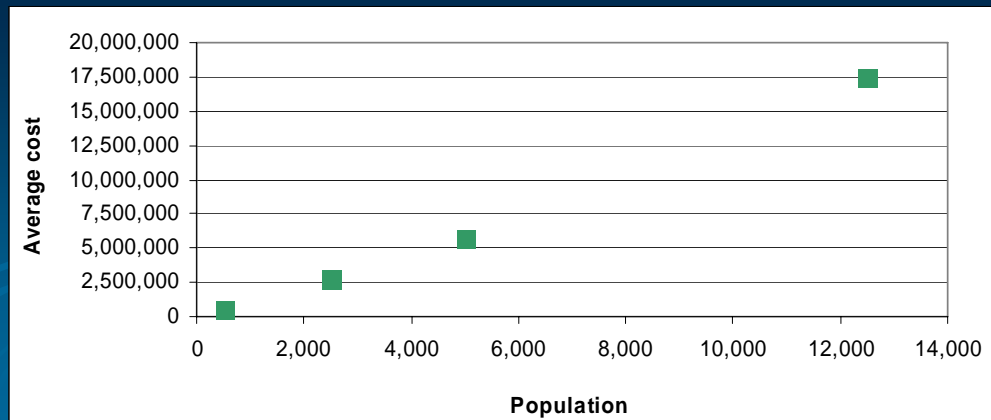
Scenario	Project Size (Population/REU)			
	500 (200)	2,500 (1,000)	5,000 (2,000)	12,500 (5,000)
New area/Flat	\$2,576,800	\$14,132,300	\$29,371,500	\$75,954,100
New area/Hilly	\$4,218,700	\$20,493,500	\$42,286,600	\$107,488,100
In-fill	\$4,442,300	\$21,814,500	\$44,822,800	\$119,459,800
Conventional Rehabilitation ^a	\$950,400	\$5,012,400	\$9,813,400	\$28,865,700
Cured-in Place ^a	\$286,000	\$1,853,600	\$4,745,800	\$17,572,700
Lining ^a	\$463,500	\$2,498,800	\$4,484,400	\$11,807,900
^a Assumes 25 percent of pipe is targeted for rehabilitation.				

Opinion of Probable Construction Costs (all scenarios)



Category III Cost Curves

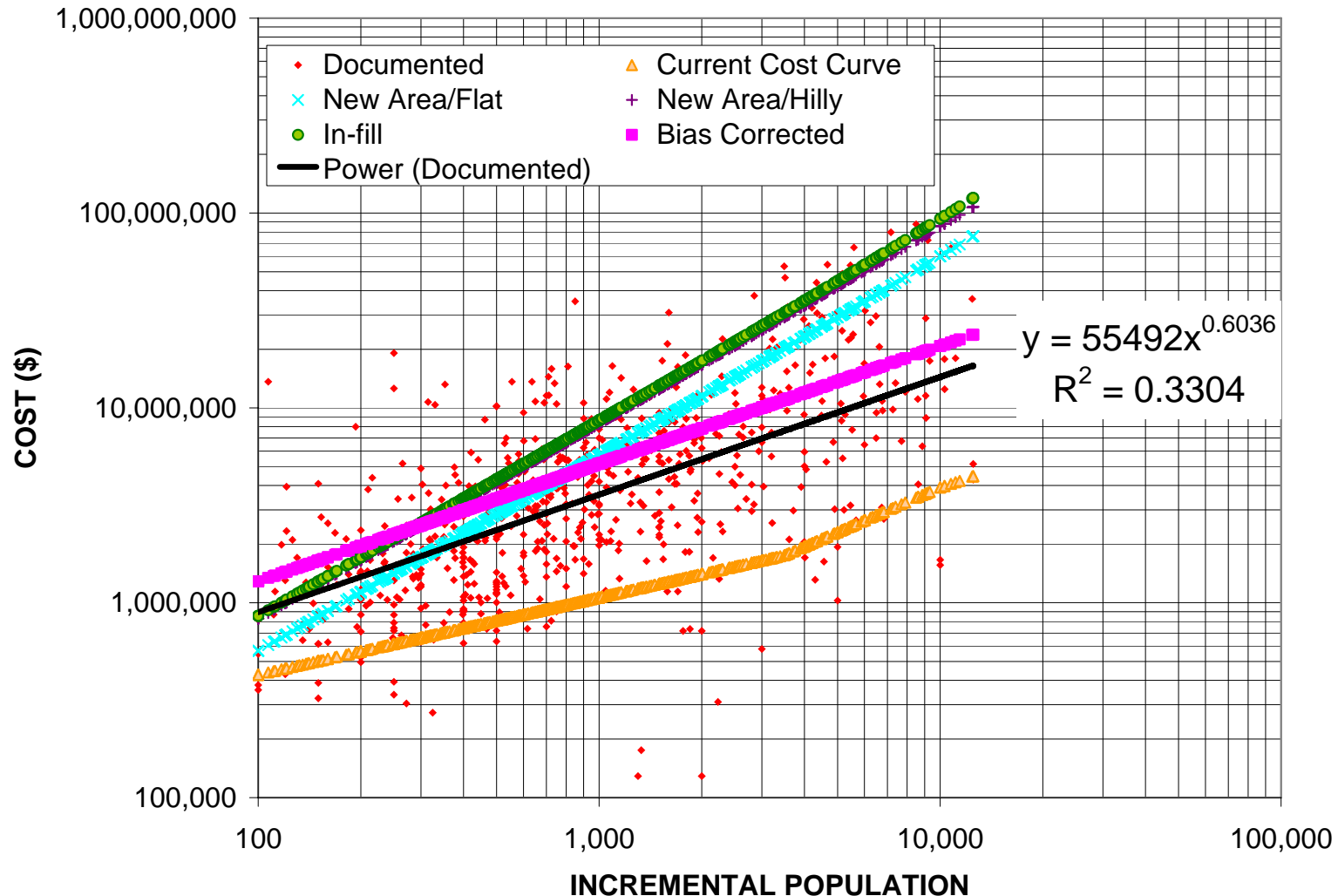
- Used costs from opinion of probable cost table for conventional rehabilitation, cured-in place, and lining for each population group.
- Simple line equation $y = mx + b$
 - y = cost
 - x = population
- Equation set up for different population intervals
 - <500
 - 500-2,500
 - 2,500-5,000
 - 5,000-15,000



Cost Curve for Category III

- Important assumptions
 - Entire sewer length is surveyed (e.g. TV inspection) and cleaned
 - Only 25% of sewer length requires rehabilitation
 - Blend of treatment options
 - 20% conventional rehabilitation
 - 40% cured in place
 - 40% lining

Comparison of Built-up Equations to Documented Needs for Cat IV



Questions

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Decentralized Wastewater Treatment Systems

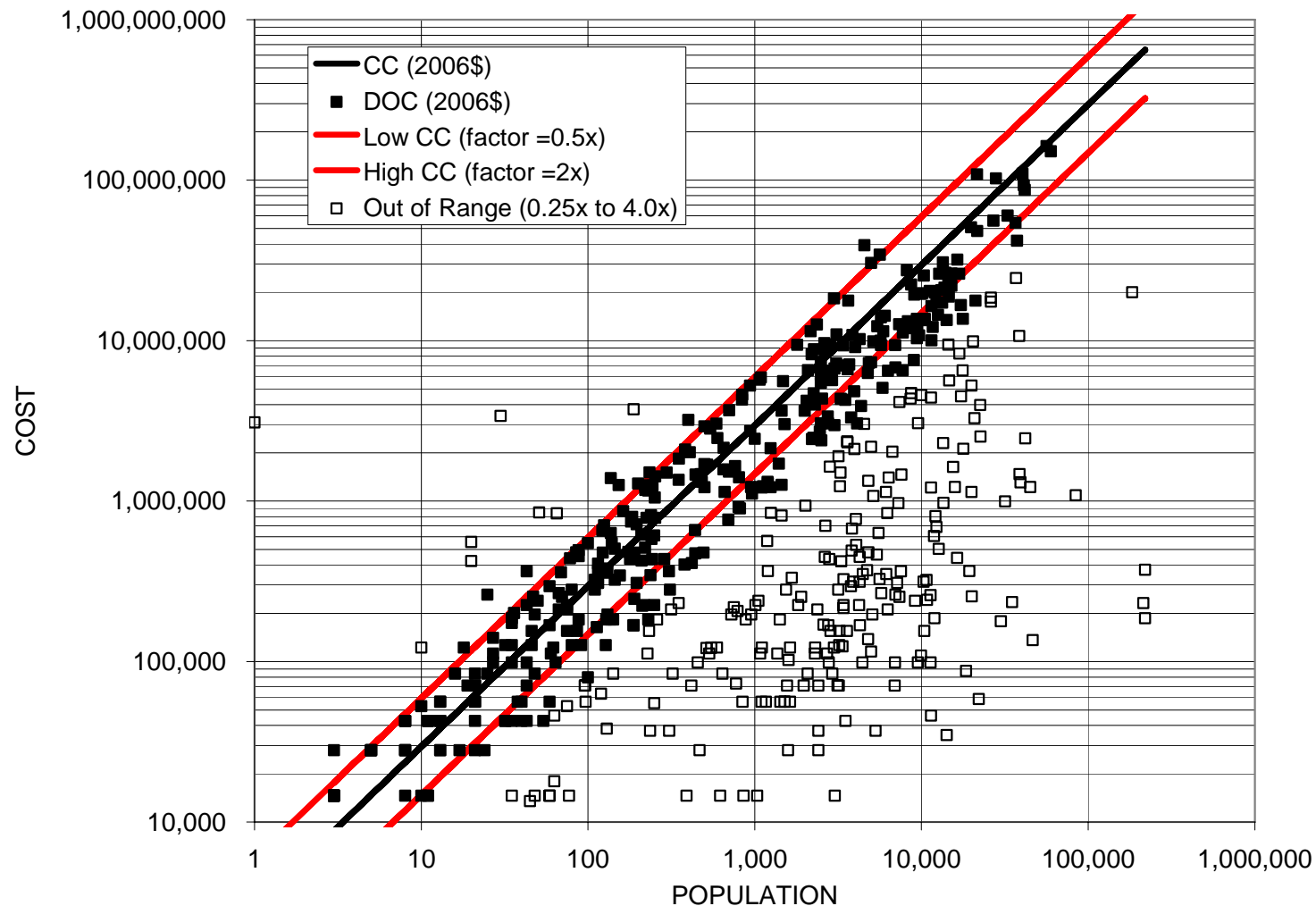
Decentralized Wastewater Treatment System Cost Curve Objective

- Re-establish decentralized treatment cost curves
- Check quality of current cost curve for individual OWTS

OWTS Background

- Individual OWTS cost was based on early 1990s literature search.
- January 2006 dollars
 - \$2,950/person
 - \$6,726/household

Individual OWTs Cost Curve Comparison



Decentralized Wastewater Treatment Systems Cost Curve Methodology

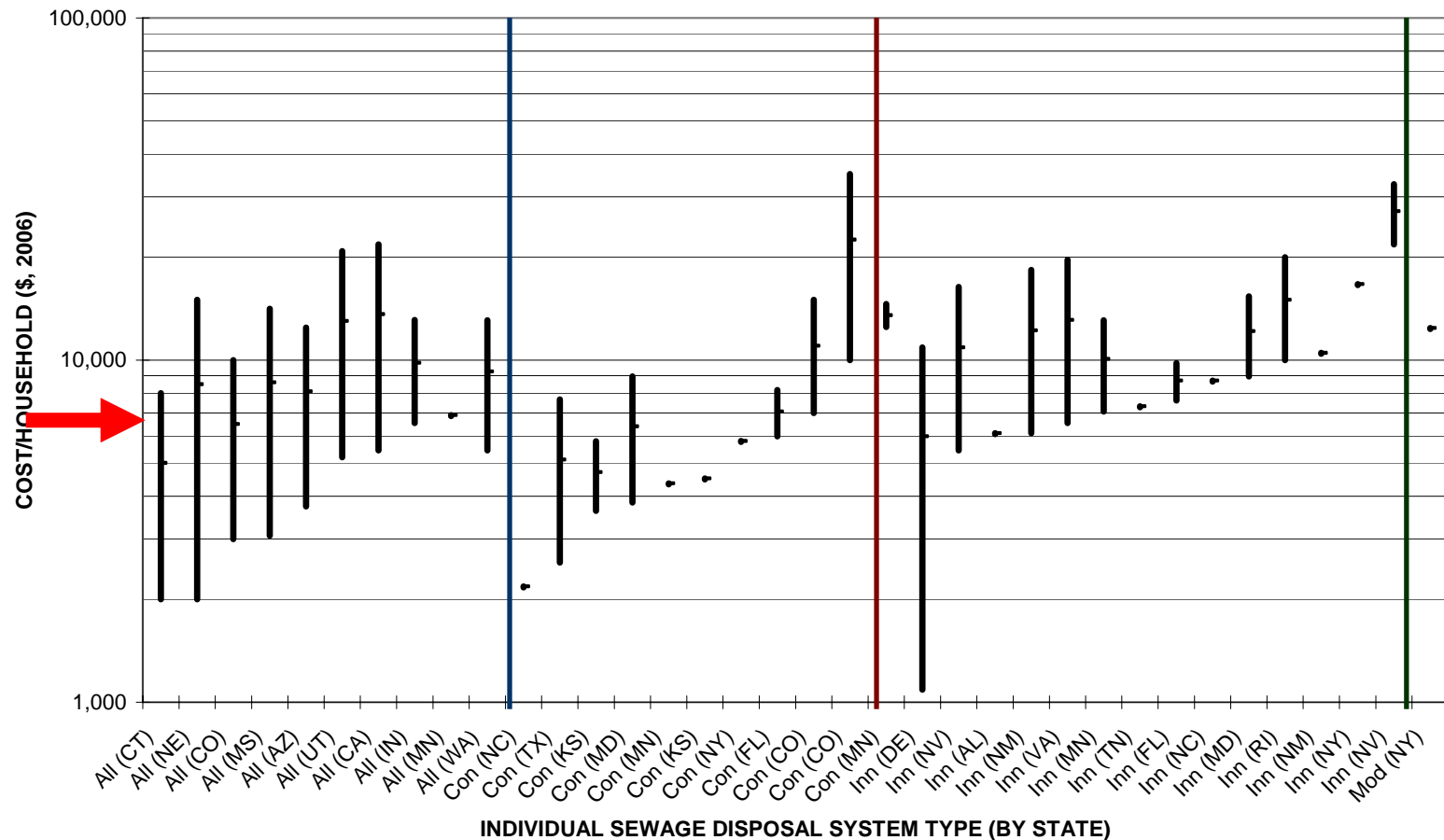
- Cost curves for *new* OWTs
 - 27 references with state or regional cost summaries
 - 21 states across the country with data points
 - 10 with All Systems
 - 12 with Conventional Systems
 - 12 with Innovative Systems
 - 5 states had both Conventional and Innovative

Decentralized Wastewater Treatment Systems Unit Cost Analysis

- New Individual Systems (OWTS)
 - All systems (**All**). Used when the publication only provided a general cost
 - Conventional Systems (**Con**). Used when the publication referred to a traditional gravity-fed tank and trench system.
 - Innovative Systems (**Inn**). Used when the publication referred to any type of system that included technology superior to that of a conventional system.

Individual OWTS Unit Costs for New Systems

Figure 1: Cost of Individual Sewage Disposal System (ISDS) for the Average Household by System Type and U.S. State



Decentralized Wastewater Treatment Systems Cost Curve Methodology

- New Individual Systems (OWTS)
 - Median average costs per household (2006 \$)
 - All systems (**All**): \$8,552
 - Conventional Systems (**Con**): \$6,100
 - Innovative Systems (**Inn**): \$10,692
 - Ratio of innovative to conventional
 - Ranged from 5:4 to 4:1
 - Average 2:1

Decentralized Wastewater Treatment Systems Cost Curve Methodology

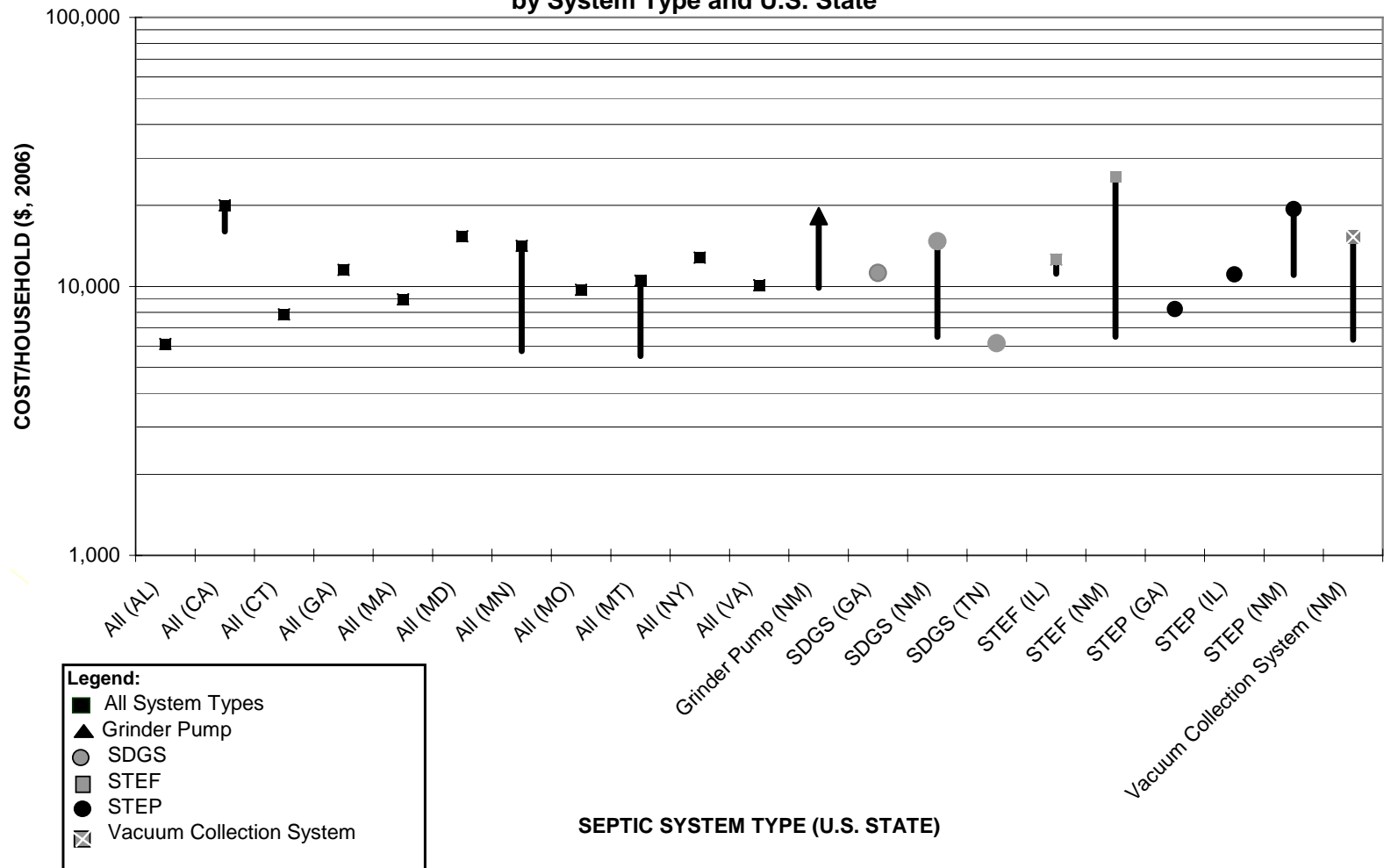
- Cost curves for ***new*** cluster systems
 - 11 references with cost summaries
 - 13 states with data points
 - 11 systems with All Systems
 - 3 with grinder pumps systems
 - 2 with small diameter gravity systems
 - 2 with septic tank effluent filter systems
 - 3 with septic tank effluent pump systems
 - 1 with vacuum collection systems

Decentralized Wastewater Treatment Systems Unit Cost Analysis

- New Community Cluster Systems
 - All system types (**All**). Used when the publication only provided a general cost.
 - Grinder Pump Systems.
 - Small Diameter Gravity Systems (**SDGS**).
 - Septic Tank Effluent Filter Systems (**STEF**).
 - Septic Tank Effluent Pump Systems (**STEP**).
 - Vacuum Collection Systems.

Community Cluster Systems

Figure 2: Community Cluster Wastewater System Cost per Household by System Type and U.S. State



Decentralized Wastewater Treatment Systems Cost Curve Methodology

- New Community Cluster Systems
 - Median average costs
 - The range of costs for all options very similar so only developed on value for cost curve.
 - \$10,801 per household (2006 \$)

Rehabilitation vs. New Costs

- Rehabilitation of systems can include a variety of approaches including the following:
 - Tank pumping/septic tank filter (only)
 - New septic tank (only)
 - Repairs to the subsurface wastewater infiltration field (only)
 - New subsurface wastewater infiltration field (only)
 - New conventional treatment system
 - New systems with additional nitrogen removal
 - New systems with nitrogen removal and/or disinfection

Rehabilitation Costs

- Remember previous slide where 2004 OWTS rehabilitation cost curve and documented costs were comparable?
 - 2004 OWTS rehabilitation cost curve represented the “All Systems” scenario
 - Keep same numbers from 2004 OWTS rehabilitation cost curve for the “All Systems” scenario
 - The ratio for All System for new systems to rehabilitation in January 2006 dollars was 0.79 and was applied to determine rehabilitation costs for OWTS innovative systems, OWTS conventional systems, and cluster systems
- Assumed 2.28 people per household

Unit Cost Data For New and Rehab. of DcWTS

System Type	Raw Unit Costs for New Systems		Unit Costs for New Systems rounded to 2 significant digits	
	Per Household (Jan 06\$)	Per Capita (Jan 06\$)	Per Household (Jan 06\$)	Per Capita (Jan 06\$)
All ISDSs (i.e., unspecified)	\$8,552	\$3,751	\$8,600	\$3,800
Conventional ISDSs	\$6,100	\$2,675	\$6,100	\$2,700
Innovative ISDSs	\$10,692	\$4,689	\$10,700	\$4,700
Cluster	\$10,801	\$4,737	\$10,800	\$4,700

System Type	Raw Unit Costs for Rehabilitation		Unit Costs for Rehabilitation rounded to 2 significant digits	
	Per Household (Jan 06\$)	Per Capita (Jan 06\$)	Per Household (Jan 06\$)	Per Capita (Jan 06\$)
All ISDSs (i.e., unspecified)	\$6,726	\$2,963	\$6,800	\$3,000
Conventional ISDSs	\$4,819	\$2,114	\$4,800	\$2,100
Innovative ISDSs	\$8,447	\$3,705	\$8,400	\$3,700
Cluster	\$8,533	\$3,742	\$8,500	\$3,700

Questions

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Wastewater Treatment Plants

Wastewater Treatment Cost Curve

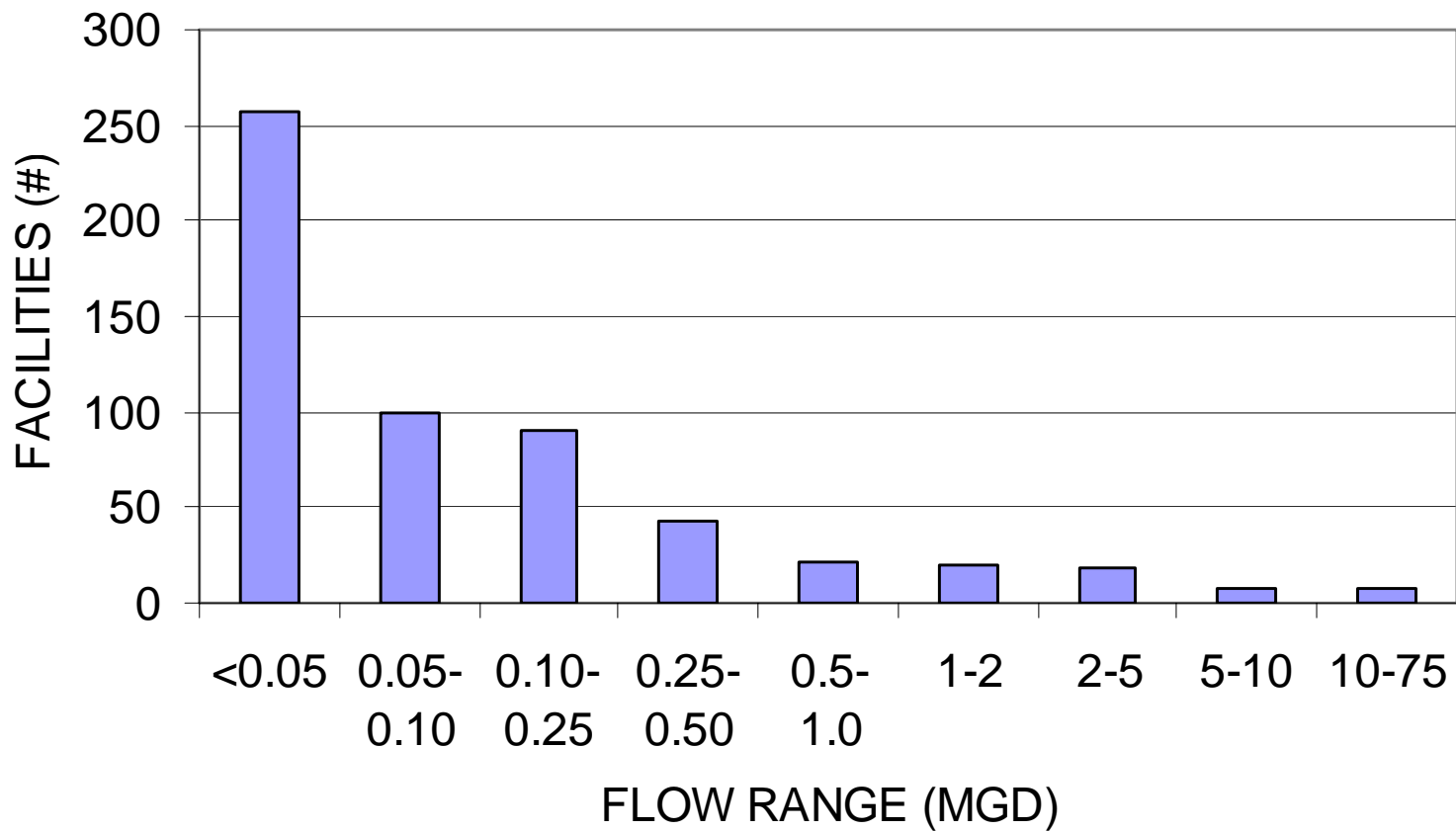
Update Objectives and Issues

- Drop distinction between Advanced Treatment I and Advanced Treatment II
 - Introduce nitrogen and phosphorus removal checkboxes instead of nutrient removal flag
 - Address unusual per capita flow rates
 - Remove connection to unit process data
 - Improve algorithm consistency*
 - Improve code transparency*
- * Non-system based secondary objective

Wastewater Treatment Cost Curve Background

- Basic structure of wastewater algorithms were developed in the 1970-80s.
- Algorithm coefficients updated for 1996 survey.

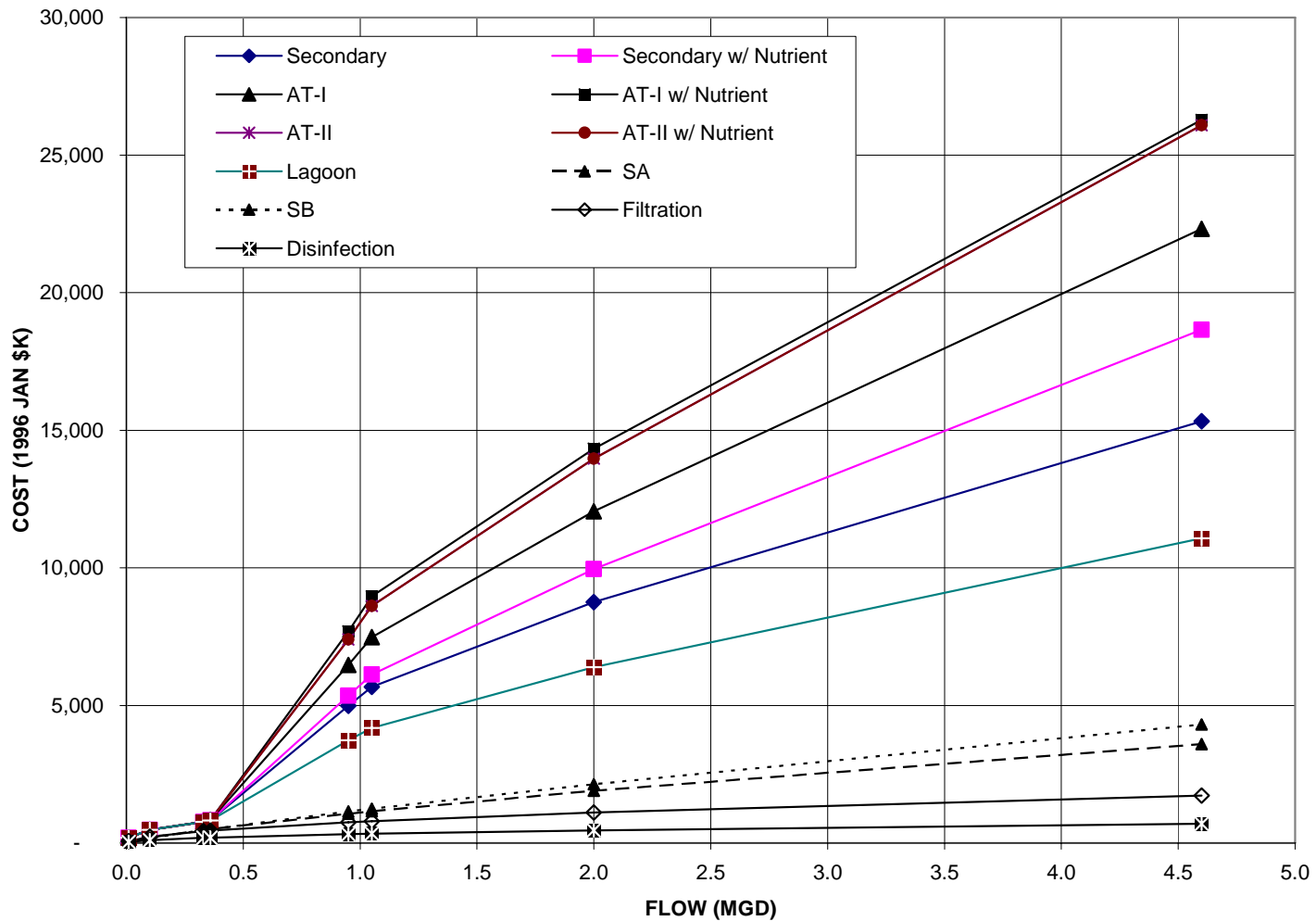
Curve Usage by Flow Range in CWNS 2004

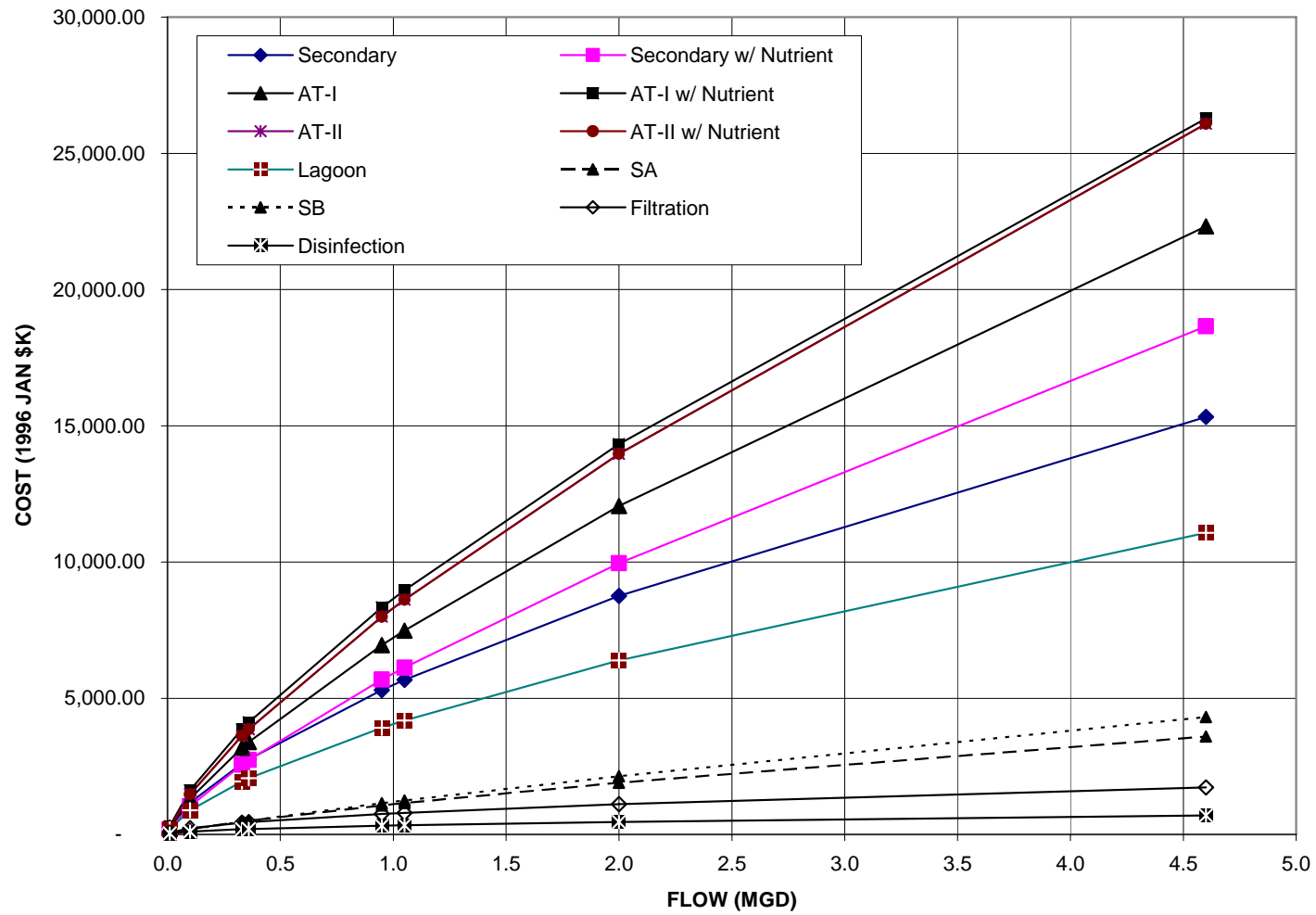


Frequency of Wastewater Treatment Plant Cost Curve Usage

Curve Type	Number of Facilities
New Treatment Plant	476
Increase Level of Treatment	82
Increase Flow Capacity	80
Increase Flow Capacity and Level of Treatment	25
Replacement of Treatment Plant	18
Disinfection Only	43

CWNS 2004 Curves





Questions

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Combined Sewers



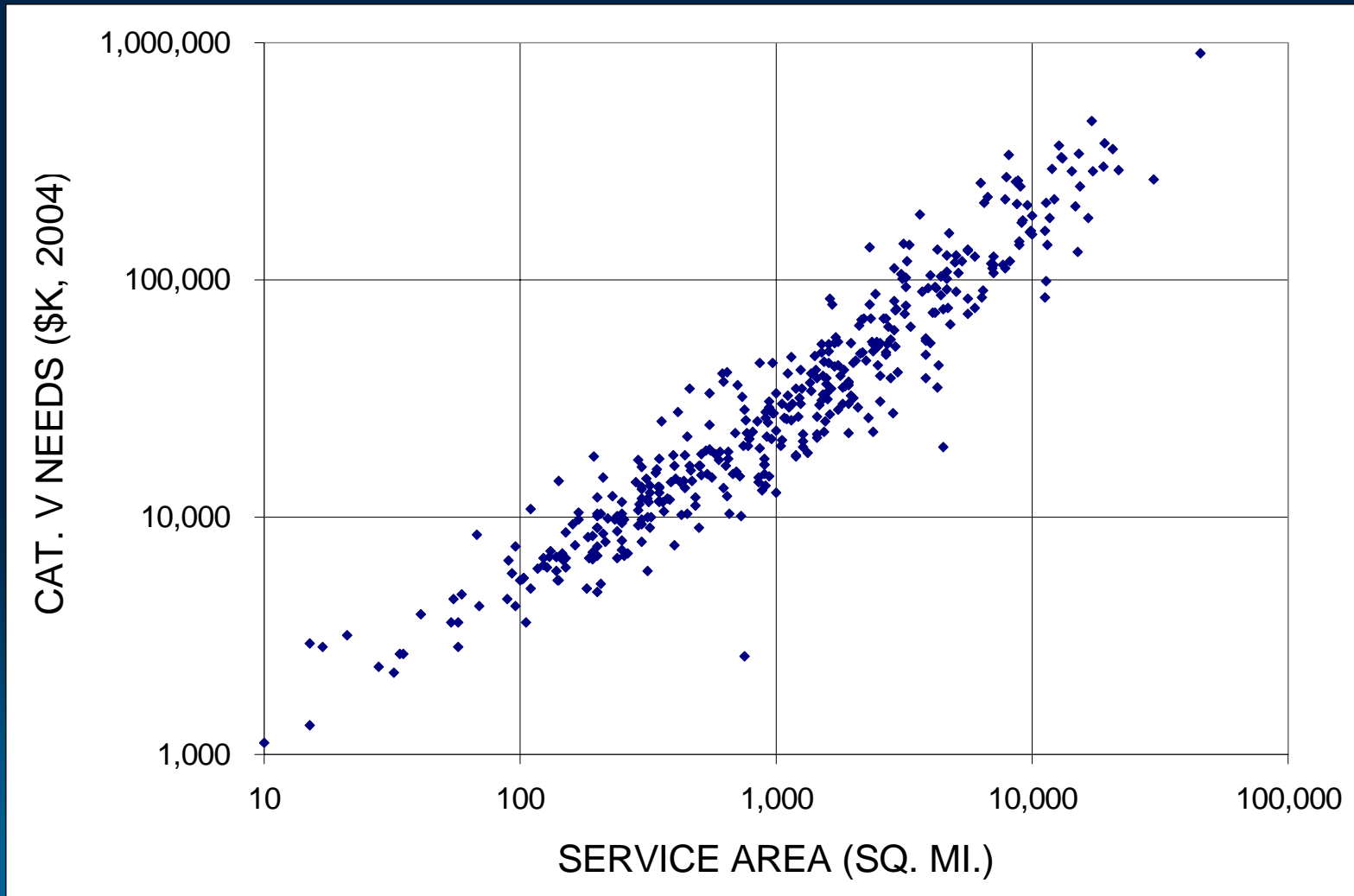
Combined Sewer Cost Curve Update Objective for 2008

- Migrate the previous curve forward without modification.

Combined Sewer Cost Curve Background

- Originally developed in support of the CSO Control Strategy in the early 1990s.
- Essentially same algorithm applied in the 1992, 1996, 2000, and 2004 Surveys.
- Presumptive Approach
 - Assumes capture and treatment of 85% of the runoff volume
 - Treatment Train
 - Primary sedimentation
 - Chlorination
 - Dechlorination

Combined Sewer Cost Curve



Questions

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Data Entry

Data Entry

- Types of cost curves
 - Treatment plants
 - Sanitary sewers
 - Decentralized systems
- Required input data
- Cost curves in the CWNS
 - Screen shots

Cost Curves for Treatment Plants

Change Type	Cost Curve Type	Category of Cost Generated
Process Improvement	Disinfection Only	I, II
Replacement	Replacement of Treatment Plant	I, II
Increase Level of Treatment	Increase Level of Treatment	I, II
Increase Capacity & Increase Level of Treatment	Increase Flow Capacity and Level of Treatment	I, II
Increase Capacity	Increase Flow Capacity	I, II
New	New Treatment Plant	I, II

Note: Only one of these curves may be assigned per facility.

Cost Curves for Sanitary Sewers

Change Type	Cost Curve Type	Category of Cost Generated
Separate Sewers Only		
Expansion	New/Expand Separate Sewers – Collector New/Expand Separate Sewers – Interceptors	IV-A, IV-B
Rehabilitation	Separate Sewer System Rehabilitation/Replacement	III
Replacement	Separate Sewer System Rehabilitation/Replacement	III
New	New/Expand Separate Sewers – Collector New/Expand Separate Sewers – Interceptors	IV-A, IV-B
Combined Sewers Only		
Process Improvement or Abandonment or Rehabilitation or Replacement or Instrumentation/ Electrical/Laboratory	Combined Sewer Overflow (CSO)	V

Cost Curves for Decentralized Wastewater Treatment Systems

Facility Type	Change Type	Cost Curve Type	Category of Cost Generated
Clustered Systems	Process Improvement or Rehabilitation	Rehabilitate Clustered Systems	XII
	New or Replacement	New Clustered Systems	XII
Onsite Wastewater Treatment Systems (OWTS)	Process Improvement or Rehabilitation	Rehabilitate OWTS – all	XII
		Rehabilitate OWTS – conventional	XII
		Rehabilitate OWTS – innovative	XII
	New or Replacement	New OWTS – all	XII
		New OWTS – conventional	XII
		New OWTS – innovative	XII

Note: See User Manual for OWTS cost curve rules.

Key Input Data

- Treatment Plants
 - Flow (Cost curves only for facilities with flow <5 MGD only)
 - Effluent Level (e.g., secondary, advanced)
 - Plant Type (mechanical vs. lagoon – in Facility Type portlet)
- Separate Sewers
 - Population Receiving Collection
- Combined Sewers
 - Service Area and Population
- Decentralized Wastewater Treatment Systems
 - Number of units
- All curves require a county to be specified

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Facility Location **Needs** Population & Flow Discharge & Effluent Pollution Combined Sewer Unit Process Utility Management

Capital Costs Funding **O & M**

Needs By Document

✖ fes: 09001: Costs Information must be specified

Document	Type	Published Date	Author	Need Type	Adjusted Total(\$)	Submit Updated Document	Footnotable	Engineer's Certification of Outdated Document	Edit	Delete
10 Year Wastewater CIP	20	07/03/2000	City of Los Angeles							
Total										

[Add Document](#)

Capital Costs

Adjusted to January 2004

Category	Classification
----------	----------------

[Add Cost](#)

Cost Curves

Cost Curve	Assigned	Cost Allocated	Error
Combined Sewer Overflow (CSO)	<input type="checkbox"/>		
Disinfection Only	<input type="checkbox"/>		
Increase Flow Capacity	<input type="checkbox"/>		
Increase Flow Capacity And Level Of Treatment	<input type="checkbox"/>		
Increase Level Of Treatment	<input type="checkbox"/>		
Separate Sewer Systems Rehabilitated/Replaced	<input type="checkbox"/>		

[Save](#) [reset](#)

Summary

	Req	Ent	Err
Facility	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Permit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Point of Contact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Location	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Needs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Population	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Flow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Discharge	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Effluent	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combined Sewer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Unit Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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State: Alejandro Escobar 12/14/2007

Reviewer: Mark Sievers 03/18/2005

Review Status

Status: State In Progress

Feedback Status:

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Review Comments

☒ Survey ☐ Feedback

Author/Date: Comment:

[Add Comment](#)

1. Needs data area

2. Selected document in green highlight

3. Available cost curves, based on nature and nature changes, are listed.

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Facility Location Needs Population & Flow Discharge & Effluent Pollution Combined Sewer Unit Process Utility Management

Capital Costs Funding O & M

Summary

	Req	Ent	Err	CC Err
Facility	✓	✓		✓
Permit				
Point of Contact	✓	✓		
Location	✓	✓	✓	
Needs	✓		✓	
Population	✓	✓		
Flow	✓	✓	✓	✓
Discharge	✓	✓	✓	
Effluent		✓	✓	✓
Pollution				
Combined Sewer	✓	✓	✓	
Unit Process				
Utility Management				

view all comments

State: Alejandro Escobar 12/14/2007

Reviewer: Mark Sievers 03/18/2005

Review Status

Status: State In Progress

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Review Comments

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Author/Date Comment

Add Comment

Save Reset

3. Errors are checked

Needs By Document

✖ fes: 09001: Costs Information must be specified

Document	Type	Published Date	Author	Need Type	Adjusted Total(\$)	Submit Updated Document	Footnotable	Engineer's Certification of Outdated Document	Edit	Delete
10 Year Wastewater CIP	20	07/03/2000	City of Los Angeles							
Total										

Add Document

Capital Costs

Adjusted to:

Add Cost

1. Click to assign & click on "Save"

2. Errors are listed

Cost Type	Need Type	Base (\$)	Adjusted (\$)	% SRF Eligible	Sanitary Sewer Overflow	Edit	Delete
Combined Sewer Overflow (CSO)							
Disinfection Only							
Increase Flow Capacity							
Increase Flow Capacity And Level Of Treatment							
Increase Level Of Treatment							
Separate Sewer Systems Rehabilitated/Replaced							

Cost Curves

Cost Curve	Assigned	Cost Allocated	Error
Combined Sewer Overflow (CSO)	<input type="checkbox"/>		
Disinfection Only	<input type="checkbox"/>		
Increase Flow Capacity	<input checked="" type="checkbox"/>		
Increase Flow Capacity And Level Of Treatment	<input type="checkbox"/>		
Increase Level Of Treatment	<input type="checkbox"/>		
Separate Sewer Systems Rehabilitated/Replaced	<input type="checkbox"/>		

Effluent Facility Flow

Just a reminder if there is an error in the Facility data set:
For treatment plant the
“Treatment Plant Type” must be
identified for a treatment plant
cost curve to run.

Status: State In Progress

Feedback Status:

Save

Review Comments

Survey Feedback

Author/Date: Comment

[Add Comment](#)

NPDES Permit Search

Keyword:

Select	Info
<input type="checkbox"/>	WV020630 Permit Type:Sludge Only County:NICHOLAS
<input type="checkbox"/>	DC0022004 Permit Type:Discharge County:DIST OF COLUMBIA ✓ Associated With Other Facility(s)
<input type="checkbox"/>	MD0064556 Permit Type:Discharge County:CHARLES
<input type="checkbox"/>	MD0067598 Permit Type:Discharge

Add/Edit Type

*Type : Treatment Plant

Status

☐ Present ☐ Projected ☒ Present and Projected

Present Treatment Plant Type

☒ Mechanical ☐ Lagoon ☐ None

Projected Treatment Plant Type

☒ Mechanical ☐ Lagoon ☐ None

Changes

Available Changes

Rehabilitation
Process Improvement
Instrumentation/Electrical/Laboratory

Selected Changes

Increase Capacity
Increase Level Of Treatment

Save Cancel

Permits

NPDES	Permit Number	Type	Use Data	Edit	Delete
-------	---------------	------	----------	------	--------

[Add Permit](#)

Point of Contact

	Present	Projected	Change	Edit	Delete
	✓	✓	Increase Capacity Increase Level Of Treatment		✗
	✓	✓	Rehabilitation		✗
	✓	✓	Rehabilitation Expansion		✗

http://esesvr-ct.lm-ese.epa.gov/portal/page

File Edit View Favorites Tools Help

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Google Go Bookmarks Popups okay Check AutoLink AutoFill Send to Settings

Needs_Page

Location	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Needs	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Population	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Discharge	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effluent	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combined Sewer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Unit Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[view all comments](#)

State: Alejandro Escobar 12/14/2007

Reviewer: Mark Sievers 03/18/2005

Review Status

Status: State In Progress

Feedback Status:

Review Comments

☒ Survey ☐ Feedback

Author/Date: Comment

[Add Comment](#)

Document Search

Document Type: Select a Document Type

Published Date From:

Published Date To:

Keyword:

Document	Type	Published Date	Author	Need Type	Adjusted Total(\$)	Submit Updated Document	Footnotable	Engineer's Certification of Outdated Document	Edit	Delete
10 Year Wastewater CIP	20	07/03/2000	City of Los Angeles	Federal	\$265,596	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="text"/>	<input checked="" type="checkbox"/>
Total				Federal	\$265,596					

[Add Document](#)

Capital Costs

Adjusted to January 2004

Category	Classification	Cost Type	Need Type	Base (\$)	Adjusted (\$)	% SRF Eligible	Sanitary Sewer Overflow	Edit	Delete
Secondary Treatment		C	Federal	214,929	265,596			<input type="text"/>	<input checked="" type="checkbox"/>

[Add Cost](#)

Cost Curves

Cost Curve	Assigned	Cost Allocated	Error
Combined Sewer Overflow (CSO)	<input type="checkbox"/>	<input type="checkbox"/>	
Disinfection Only	<input type="checkbox"/>	<input type="checkbox"/>	
Increase Flow Capacity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Increase Flow Capacity And Level Of Treatment	<input type="checkbox"/>	<input type="checkbox"/>	
Increase Level Of Treatment	<input type="checkbox"/>	<input type="checkbox"/>	
Separate Sewer Systems Rehabilitated/Replaced	<input type="checkbox"/>	<input type="checkbox"/>	

"Cost Allocated" is checked

Decentralized Wastewater Treatment Systems

Summary

	Req	Ent	Err	CC Err
Facility	✓	✓		
Permit	✓		✓	
Point of Contact	✓	✓		
Location	✓	✓	✓	
Needs	✓		✓	
Population	✓	✓		
Flow	✓	✓	✓	
Discharge	✓	✓	✓	
Effluent	✓	✓		
Pollution				
Unit Process				
Utility Management				

[view all comments](#)

State: Alejandro Escobar 12/14/2007

Reviewer:

2. Only certain curves are avail.

Review Comments

☒ Survey ☐ Feedback

Author/Date Comment

[Add Comment](#)

Document Search

Facility

Location

Needs

Population & Flow

Discharge & Effluent

Pollution

Unit Process

Utility Management

Capital Costs

Funding

O & M

Needs By Document

✖ fes: 09001: Costs Information must be specified

Document	Type	Published Date	Author	Need Type	Adjusted Total(\$)	Submit Updated Document	Footnotable	Engineer's Certification of Outdated Document	Edit	Delete
Test by Alejandro	20	01/01/2004	Alejandro							
Total										

[Add Document](#)

Capital Costs

Adjusted to January 2004

Category	Type	Base	Assigned	Cost Allocated	Error
Cost Curves					
New Onsite Wastewater Treatment Systems - all			<input type="checkbox"/>		
New Onsite Wastewater Treatment Systems - conventional			<input type="checkbox"/>		
New Onsite Wastewater Treatment Systems - innovative			<input type="checkbox"/>		
Rehab Onsite Wastewater Treatment Systems - all			<input type="checkbox"/>		
Rehab Onsite Wastewater Treatment Systems - conventional			<input checked="" type="checkbox"/>		
Rehab Onsite Wastewater Treatment Systems - innovative			<input checked="" type="checkbox"/>		

[Save](#) [Reset](#)

1. Click to assign & click on "Save"

3. Population errors

[Population](#)

[Population](#)

Population Information

ccv: 01016: Number of houses with Rehab OWTS - Conventional must be > 0 and <= present Number of Units with OWTS
ccv: 01015: Number of Units with Rehab OWTS - Innovative must be > 0 and <= present Number of Units with OWTS

	Resident Population			Non- Resident Population		
	Present	Projected	Projected Year	Present	Projected	Projected Year
ing Collection	165	241				
Upstream Collection						
Total Receiving Treatment	165	241				
Clustered Systems						
Onsite Wastewater Treatment Systems	56	70	2015			
Total (Excluding Upstream)	221	311				

☐ Small Community Exception Flag

Save reset

1. Click "details" to add # of Units

2. Click "details" to add # of households

3. Enables when curves assigned

4. Enter # of Units per curve

Edit Onsite Wastewater Treatment Systems Population

	Resident Population						Non- Resident Population					
	Present			Projected			Present			Projected		
	Population per Unit	Number of Units	Total	Number of Units	Total	Year	Population per Unit	Number of Units	Total	Number of Units	Total	Year
Onsite Wastewater Treatment Systems	2.8	20	56	25	70	2015	2.8		0		0	

Save Cancel

Cost Curve Population

Onsite Wastewater Treatment Systems	Resident Population		Non-Resident Population	
	Number of Houses *	Total	Number of Houses **	Total
* Rehab Onsite Wastewater Treatment System - innovative:	15	42		
* Rehab Onsite Wastewater Treatment System - conventional:	3	8		

* Residential Population per House: 2.8
** Non-residential Population per House: 2.8

Save reset

submit

Summary

	Req	Ent	Err	CC Err
Facility	✓	✓		
Permit	✓		✓	
Point of Contact	✓	✓		
Location	✓	✓	✓	
Needs	✓	✓	✓	
Population	✓	✓		
Flow	✓	✓	✓	
Discharge	✓	✓	✓	
Effluent	✓	✓		
Pollution				
Unit Process				
Utility Management				

[view all comments](#)

State: Alejandro Escobar 12/14/2007

Reviewer:

Review Status

Status: State In Progress

Feedback Status:

Save

Review Comments

Survey Feedback

Author/Date Comment

[Add Comment](#)

Document Search

Facility Location Needs Population & Flow Discharge & Effluent Pollution Unit Process Utility Management

Capital Costs Funding O & M

Needs By Document

Warning: 09009: Sanitary Server Overflow (SSO) with a Cost Category that is valid for SSO

Document	Type	Published Date	Author	Need Type	Adjusted Total(\$)	Submit Updated Document	Footnotable	Engineer's Certification of Outdated Document	Edit	Delete
Test by Alejandro	20	01/01/2004	Alejandro	Federal	\$166,653		✓			
Total				Federal	\$166,653					

[Add Document](#)

Capital Costs

Adjusted to Jan 2004

Classification	Cost Type	Need Type	Base (\$)	Adjusted (\$)	% SRF Eligible	Sanitary Sewer Overflow	Edit	Delete
XII: Decentralized Wastewater Treatment	C	Federal	155,610	138,647		N/A		
XII: Decentralized Wastewater Treatment	C	Federal	31,433	28,006		N/A		

[Add Cost](#)

Cost Curves

	Assigned	Cost Allocated	Error
New Onsite Wastewater Treatment	<input type="checkbox"/>		
New Onsite Wastewater Treatment	<input type="checkbox"/>		
New Onsite Wastewater Treatment	<input type="checkbox"/>		
Rehab Onsite Wastewater Treatment Systems - all	<input type="checkbox"/>		
Rehab Onsite Wastewater Treatment Systems - conventional	<input checked="" type="checkbox"/>	✓	
Rehab Onsite Wastewater Treatment Systems - innovative	<input checked="" type="checkbox"/>	✓	

Combined Sewer Cost Curve

- Can only be associated with Document Type 98: CSO Cost Curve
- Requires Combined Sewer data area to be completed.
- Cost curves run for entire Sewershed

Facility: 42005037003 - ALIQU

Location Needs Population Discharge Pollution Combined Sewer Unit Process

Combined Sewer

CSO Status: CC to be selected

Population (& area) to be completed

CSO Status: Requires a Cost Curve

Documented

* Cost Curves

Save reset

Population

75

Questions

Questions can be asked at anytime by typing them in the chat box and clicking



.

<http://www.epa.gov/cwns>

- List of CWNS state & regional coordinators (Where You Live)
- News about CWNS 2008
 - Web seminar schedule, “Questions and Answers,” and links to recorded sessions
 - Resources
 - Links to contact information for state & regional NPS, Onsite , and Stormwater Coordinators
- Access to CWNS data and Reports to Congress

Next Web Seminar

- January 29: Documenting NPS Needs

Contacts & More Information

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Sign up for CWNS updates by emailing
cwns@epa.gov.